



División  
Programas de la UE



**CDTI** Centro para el  
Desarrollo  
Tecnológico  
Industrial

# INDUSTRIA 4.0 EN EL PROGRAMA H020

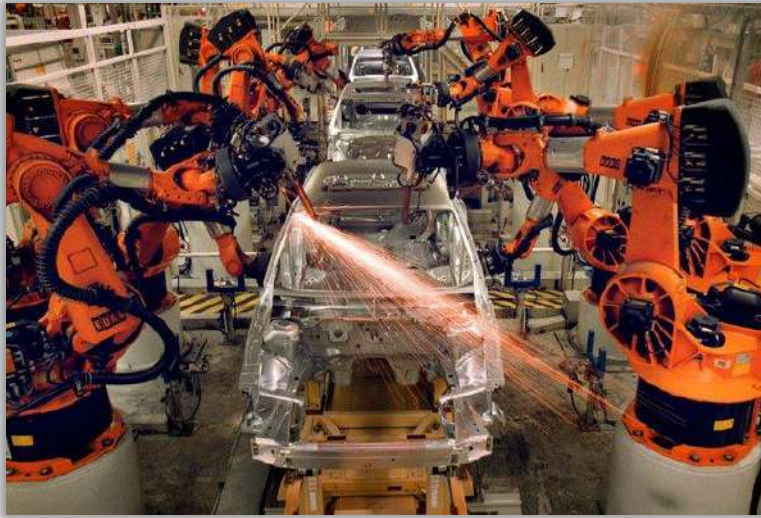
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**CDTI**

ICT - Horizonte2020

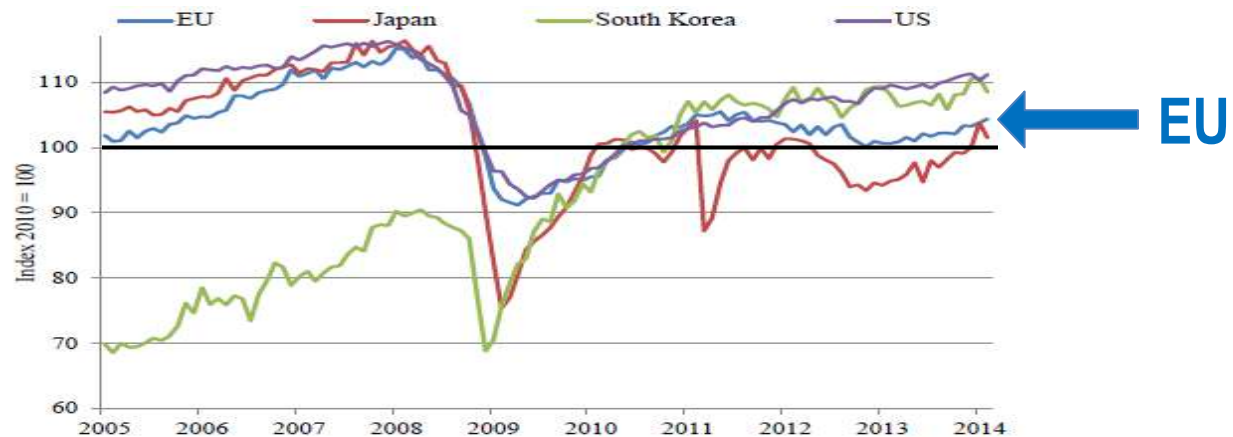
# La industria Europea



**Pilar económico en Europa:**

- 2 millones empresas
- 33 millones empleos
- Ingresos anuales de 110.000 M€ de incremento por medio de la

***DIGITALIZACIÓN***



# 4ª Revolución industrial: Digitalización

“Digital is transforming European industry. It's changing the way we produce cars or chemicals, and how banks deliver financial services. Our challenge is to turn the 4<sup>th</sup> Industrial Revolution to our advantage, to reap the opportunities it brings.”

Günther H. Oettinger

 @GOettingerEU  
#4IR



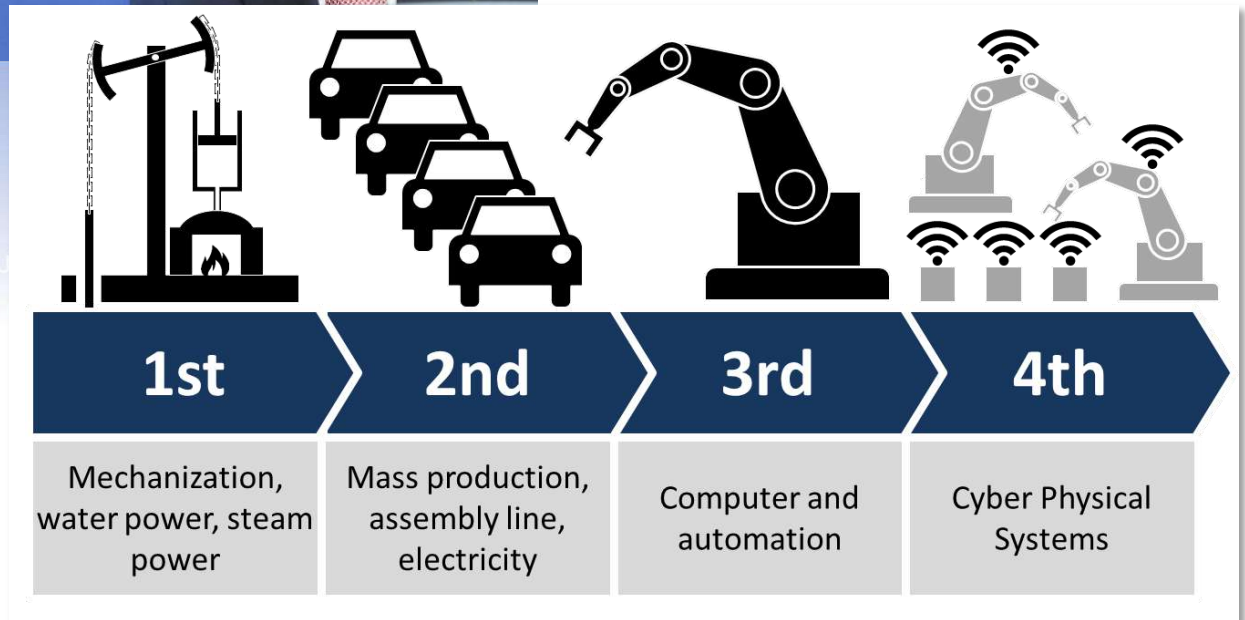
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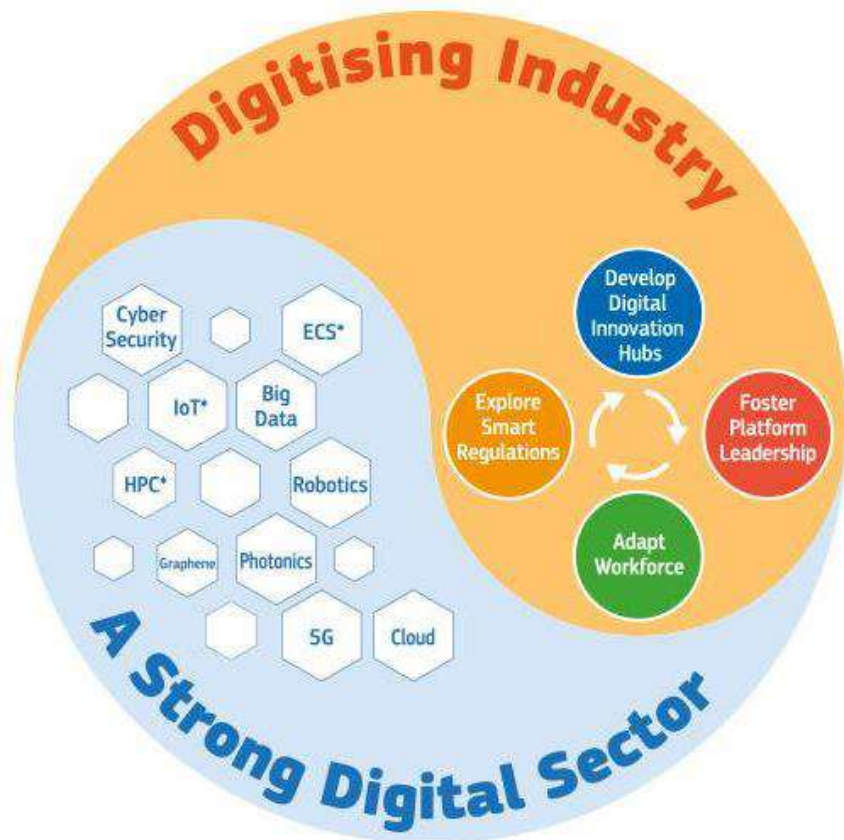
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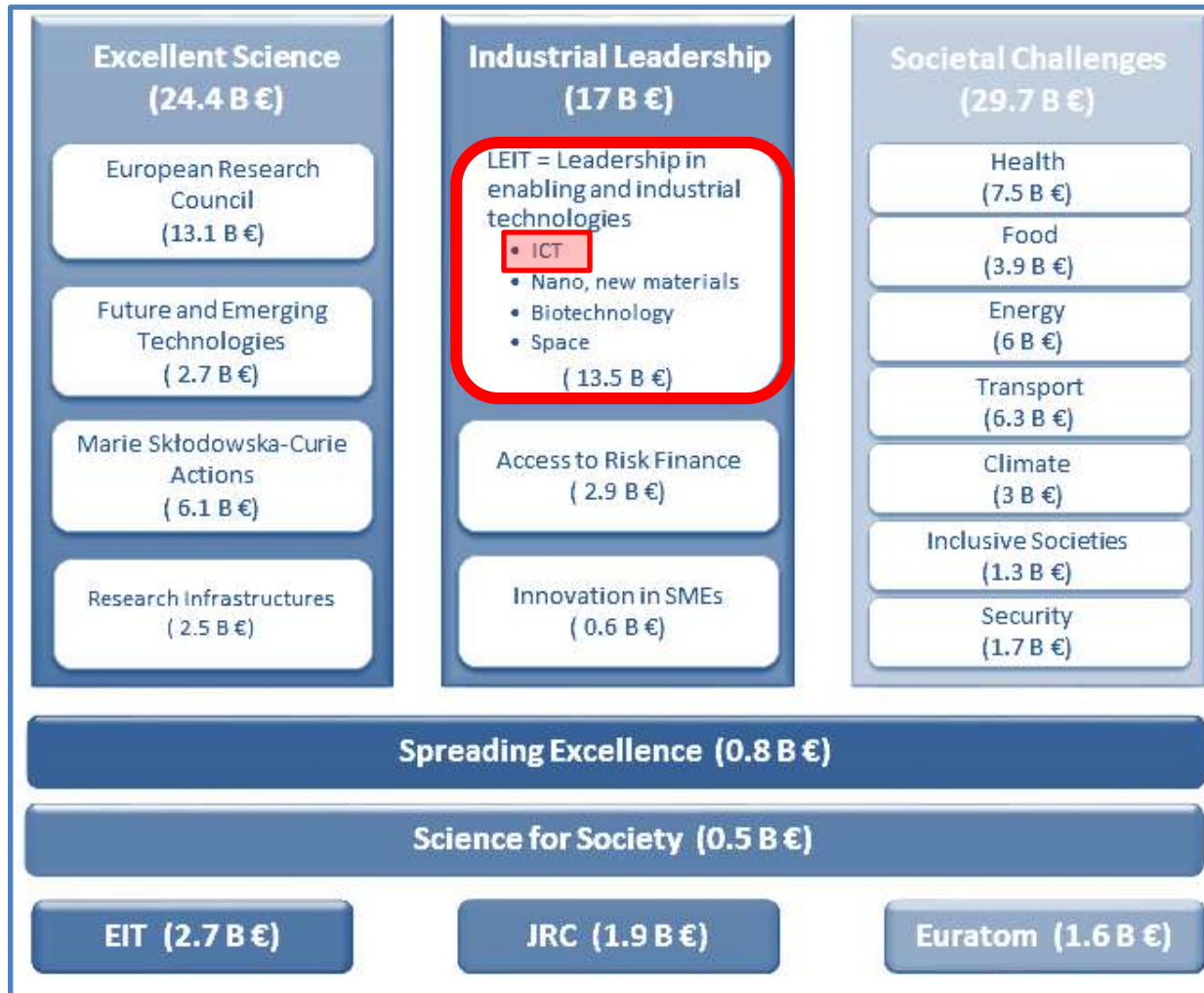
# Digitising European industry

<https://ec.europa.eu/digital-single-market/en/digitising-european-industry>

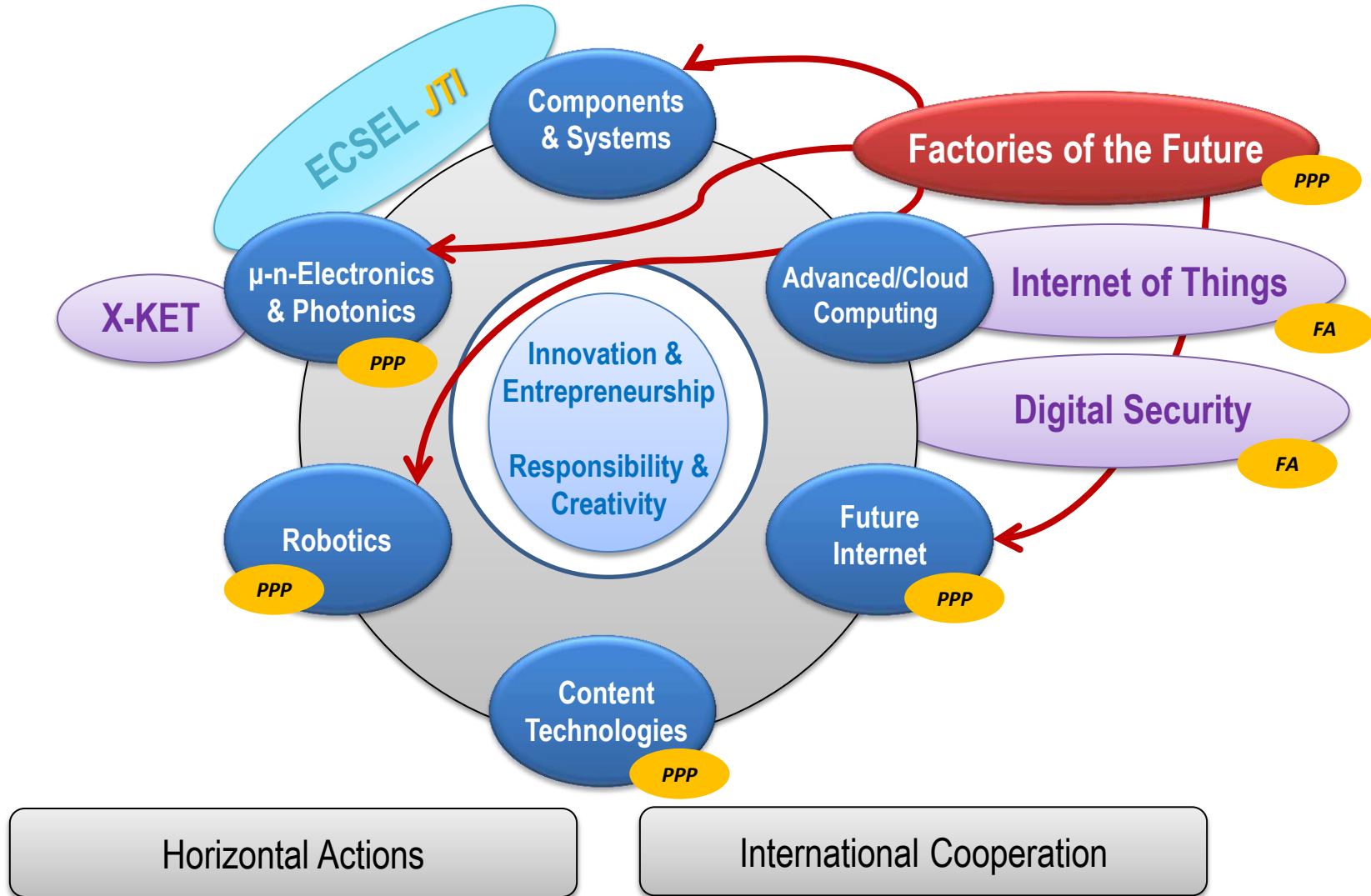


1. Digital Innovation Hubs
2. Uso Plataformas existentes:  
*BigData, IoT, 5G, ...*
3. Estandarización y regulación
4. Mejora empleabilidad (formación)

# Horizonte 2020



# H2020 – Liderazgo Industrial (LEIT) - ICT



# FoF - FACTORIES OF THE FUTURE (PPP)



“...development and integration of enabling technologies, such as technologies for *adaptable machines*, *ICT for manufacturing* and novel industrial handling of *advanced materials*.”

[http://ec.europa.eu/research/industrial\\_technologies/factories-of-the-future\\_en.html](http://ec.europa.eu/research/industrial_technologies/factories-of-the-future_en.html)

## INDUSTRY 2020 IN THE CIRCULAR ECONOMY

Call Topics 2016

### Call Topics 2017:

- **FoF – 06 /.../ 10: 85 M€**
  - **FoF-06-2017:** New product functionalities through advanced **surface manufacturing** processes for mass production
  - **FoF-07-2017:** Integration of unconventional technologies for **multi-material processing** into manufacturing systems
  - **FoF-08-2017:** In-line measurement and control for **micro-/nano-enabled high-volume manufacturing** for enhanced reliability
  - **FoF-09-2017:** Novel design and **predictive maintenance** technologies for increased operating life of production systems
  - **FoF-10-2017:** New technologies and life cycle management for reconfigurable and **reusable customised products**
  
- **FoF-12-2017: ICT Innovation for Manufacturing SMEs. 33 M€** **I4MS**

# I4MS 1/2



## I4MS

### Objective:

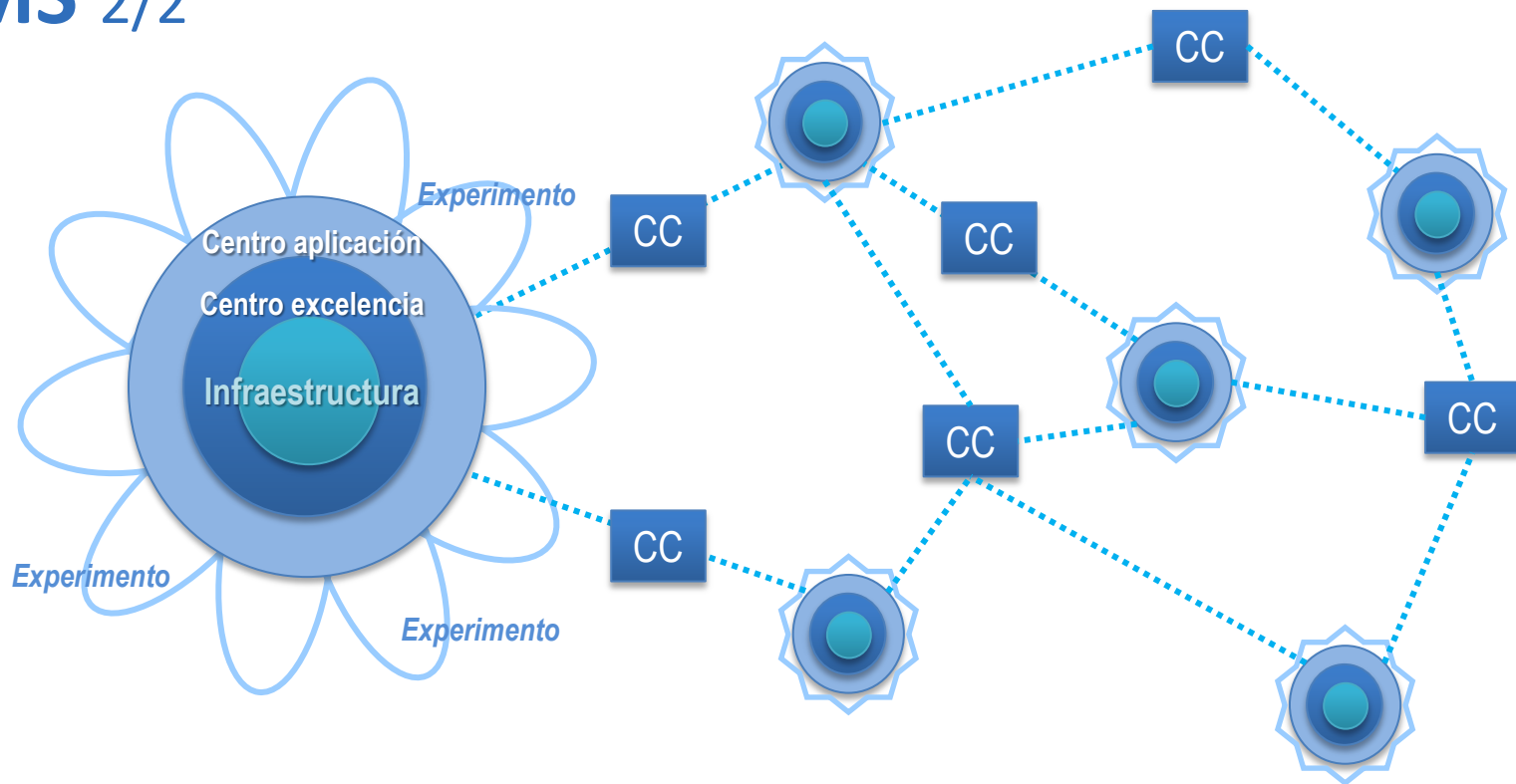
Enhancing digital transformation in manufacturing SMEs and mid-caps

[www.i4ms.eu](http://www.i4ms.eu)

### Phase 1 + 2:

- 75 + 35 M€ of EU funding (7 + 4 large projects)
- 40 + 30 competence centres
- 140 + 80 experiments
- 22 Members States & Ass. Countries
- Focus on **4 areas of ICT** adoption in the FoF:
  - *HPC cloud-based modelling, simulation and analytics services*
  - *Industrial robotics systems*
  - *Laser-based manufacturing*
  - *Smart sensors systems, CPS and IoT*





## *Centros de Competencia: Actúan como corazón de los Digital Innovation Hubs*

- Facilitadores del acceso a la tecnología
- Servicio para el desarrollo de tecnologías
- “Broker” entre usuarios y fabricantes

# FOF-12-2017

## IA: Innovation Actions (1/2)

70% (5-8 M€)

Han de cubrir 3 aspectos:

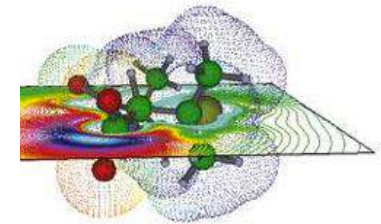
1. Establecer una **red de Centros de Competencia** para empresas que deseen experimentar con el uso de tecnologías digitales en procesos de fabricación. Relación con *hubs de innovación regionales*.
2. Realización de un conjunto (masa crítica) de **experimentos trans-fronterizos** para adecuar las tecnologías a las *necesidades de los usuarios finales*.  
**“Cascade Funding”**: 2-100 K€, Max: 50% financiación.
3. Alcanzar a largo plazo el establecimiento de un **mercado de servicios tecnológicos** por medio de los *Centros de Competencia* y el *eco sistema* desarrollado. Ha de servir como incentivo para atraer a los **inversores** a soportar el desarrollo de negocio de *PYMES* y empresas de tamaño medio.

## IA: Innovation Actions (2/2)

70% (5-8 M€)

Tecnologías:

1. Integration of **CPS and IoT concepts** in smart production environments.
2. **Robotics systems** cost effective at lower lot sizes.
3. **HPC Cloud-based** modelling, simulation and analytics services focusing on sustained service models and real-time support.
4. **Digital design for additive Manufacturing** focusing on link between design tools and production.

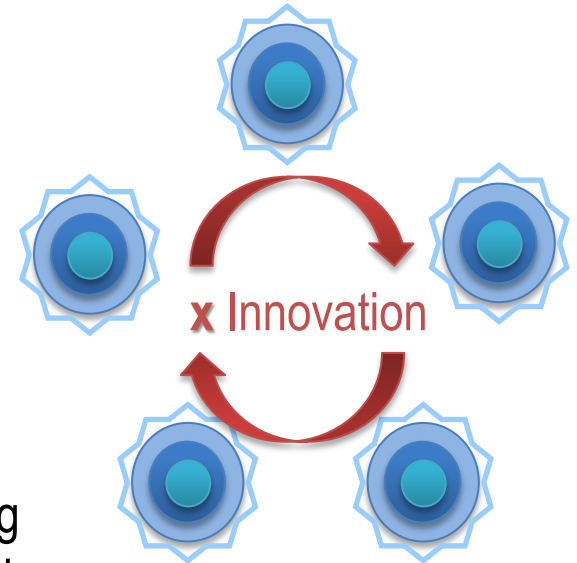


## CAS: Coordination and Support Action

100% (1 M€)

*Scope: To advance the I4MS Ecosystem*

1. Single **portal** for newcomers
2. **Sharing** of best practices
3. **Dissemination**
4. **Brokering** between users and suppliers
5. **Identifying new ICT technologies** that can benefit from I4MS scheme
6. Levering **further investment** ( mapping and matching competences in and *between regions* & linking up with *regional/national initiatives* )



# FOF-12-2017

## Impacto

### Aportar objetivos medibles

- Exploration of new application areas for advanced ICT in manufacturing: **attract** a significant number of **new users**, in particular SMEs and Mid-caps
- More innovative and **competitive technology suppliers**, in particular SMEs
- More **competitive European service providers** through provisioning of new types of services and strengthening the presence on local markets.
- Creation of a self-sustainable **ecosystem** of competence centers, users and suppliers covering a large number of **regions** and their smart **specialisation**
- A critical mass of pan European **experiments** covering the whole **value chain** to demonstrate innovative and sustainable business models

# Otras convocatorias H2020

## FoF:

- **FoF-09-2017:** Novel design and predictive maintenance technologies for increased operating life of production systems.

## ICT:

- **ICT-04-2017:** Smart Anything Everywhere Initiative (Embedded, Low energy computing,  $\mu$ -Electronics. Large area electronics in SMEs. , “*cascade funding*”).
- **ICT-15-2017:** Big Data PPP: Large Scale Pilots.
- **ICT-25-2017.c:** Advanced robot capabilities research & take-up.
- **ICT-27-2017.b:** System abilities, SME & benchmarking, safety certification (For SMEs, “*cascade funding*”).
- **ICT-30-2017.b:** Photonics KET (Incubator for SMEs, “*cascade funding*”).

## OTROS:

- **H2020-NMBP:** Procesos productivos en general
- **Clean Sky 2 (JTI)** : Fabricación en aeronáutica

# RESULTADOS FoF-11-2016

## Digital Automation (1/2)

### **FoF-11.a Research & Innovation Actions (RIAs): 51 M€ (49 prop.):**

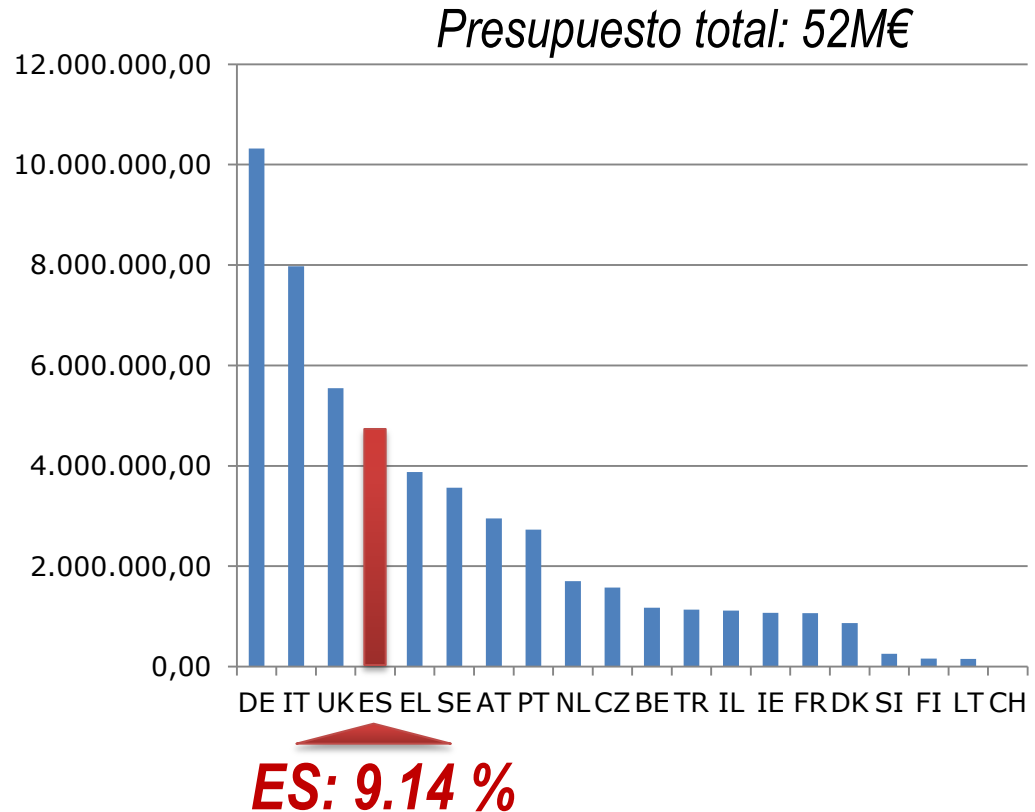
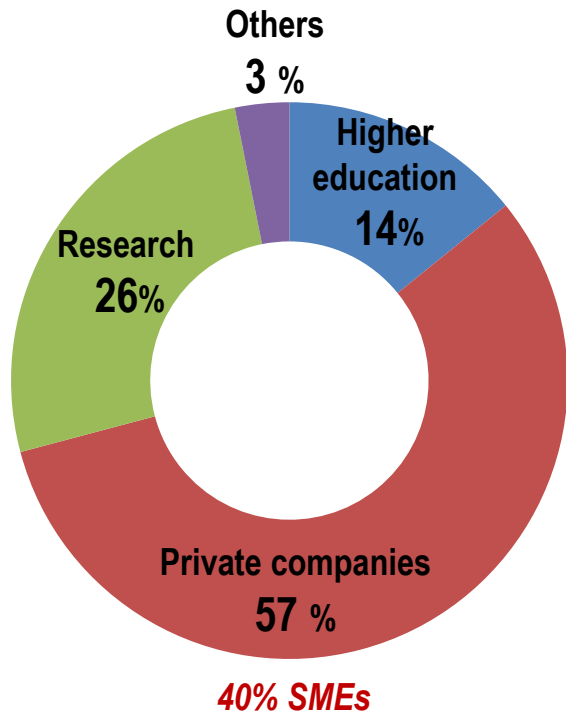
- *Collaborative manufacturing and logistics: 4 proposals*
- *Novel architectures for factory automation: 5 proposals*

### **FoF-11.b Coordination & Support Actions (CSAs): 2 M€ (1 prop.):**

- *Industrial scenarios for connected factories*
- *Digital integration and interoperability of manufacturing systems and processes*
- *Consensus building: standardisation, security and business models*

# RESULTADOS FoF-11-2016

## Digital Automation (2/2)





# Conclusiones

- La **participación española** ha sido aceptable.
- Las propuestas están en línea con el documento de “**Digitisation of European Industry**”
- Hay una gran variedad de actores involucrados, con un elevado **peso de la industria**.
- Desde el CDTI **podemos ayudar**.



# Personas de Contacto en CDTI:

## Leadership in Enabling and Industrial Technologies: ICT & Other



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# MUCHAS GRACIAS

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<http://eshorizonte2020.es/>